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(54) Improved fruit flavored beverages.

(57) A method is disclosed for producing an enhanced flavor impact and improved mouthfeel character in an acidic fruit-flavored beverage comprising adding a protein hydrolyzate at a level of from 0.1 to 1 gram per liter on an as-consumed basis. The protein hydrolyzate must be bland and free from appreciable off-flavors or off-odors and must be soluble in water at pH 2.5 to 4 and preferably also soluble in cold water.

CASE 2981

DESCRIPTION  
IMPROVED FRUIT FLAVORED BEVERAGES

5    Technical Field

          The invention relates to beverages and more particularly to the addition of certain chemical compounds or compositions which have been found to have utility in the alteration of flavor or mouth-  
10    feel characteristics of said beverages.

Background Art

          In the food industry there is a constant demand for the production of additives, whether naturally occurring or synthetic, which are capable of impart-  
15    ing, supplementing or improving the flavor or mouthfeel characteristics of the foodstuffs. It is common in some segments of the industry to add flavor agents to enhance or bring out a desirable characteristic in products and by so doing, render  
20    the product more desirable from a consumer preference standpoint.

          U.S. Patent 3,395,021 issued to Glicksman et al. teaches a dry fruit flavor beverage mix containing edible acids such as citric, tartaric,  
25    adipic, and formic acids. These acids in combination with a gum system produce a product which is similar in flavor and mouthfeel to a fresh fruit beverage. The acids provide tartness in the reconstituted beverage.

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U.S. Patent 3,736,150 entitled "Beverage Containing Egg Albumen and Amino Acid" issued to Basso et al. teaches the addition of egg albumen and an amino acid (glycine) to a dry beverage mix, where the egg albumen and glycine are present as the major sources of protein. The glycine also serves an additional function as a flavor enhancer, masking the objectionable egg odor and taste, resulting in a product that is substantially indistinguishable from a similar beverage with all the protein omitted.

U.S. Patent No. 3,649,298 entitled "Carbonation Concentrates For Beverages and Process of Producing Carbonated Beverages" issued to Kreevoy teaches a dry beverage mix containing n-carboxy-amino acid anhydride in combination with the disodium salts of n-carboxy-amino acid producing a carbonated beverage mix.

U.S. Patent 3,510,310 entitled "Artificially Sweetened Beverages and Mixtures Thereof" issued to Breckwoldt teaches a dry beverage mix comprising an edible water-soluble amino carboxylic acid (e.g. glycine, lysine, methionine, etc.). This mix is reconstituted to provide a beverage having a taste and texture similar to the beverage sweetened with sugar. This invention purports to solve the adverse problem associated with artificially sweetened beverages in overcoming the lack of texture and mouthfeel that is inherent in such a beverage.

U.S. Patent 4,031,259 entitled "Process of Preparing Nutritive Sweetening Compositions" issued to Lugay et al. teaches a process for improving the solubility and stability of dipeptide nutritive sweeteners comprising co-drying an amino acid derived nutritive sweetener with a low molecular weight polypeptide, preferably an enzymatically

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hydrolyzed non-gelatin protein, wherein the ratio of sweetener to polypeptide is from about 1:1 to about 1:20.

05        On analysis, fruit juices, in particular orange  
juices are known to contain as much as 9% protein-  
aceous materials on a dry weight total solids basis.  
The individual amino acids themselves are sweet,  
sour, bitter or bland. The prior art neither teaches  
10        nor appreciates that either amino acids, peptides or  
polypeptides are important flavor contributors to  
fruit juices, or the possibility that they could be  
utilized to produce an enhanced flavor impact and an  
improved mouthfeel character in a fruit-flavored dry  
beverage mix at a low level of incorporation.

15        The commonly-assigned U.S. Patent Application  
No. 435,162 filed on October 19, 1982 which is  
entitled Amino Acids as Dry Beverage Mix Ingredients  
in the name of Schenz teaches a method of producing  
an enhanced flavor impact and an improved mouthfeel  
20        character in a dry beverage mix comprising the  
addition of amino acids. The specific amino acids  
which produce the effect were l-proline, l-aspar-  
agine, l-aspartic acid, l-arginine,  $\gamma$ -amino-n-butyric  
acid, l-alanine, l-glutamine and combinations thereof.  
25        The level of incorporation of the amino acids in a  
dry mix varies from 0.1% to 8% on a dry weight  
basis. When reconstituted with water the level of  
amino acids commonly varies from 0.1 to 8 grams per  
liter on an as-consumed basis.

30        There has been a constant demand in the food  
art for the production of a formulated beverage,  
whether it be a dry beverage mix, ready-to-drink  
beverage or beverage concentrate which would contain  
a flavor and mouthfeel more akin to a real fruit  
35        juice.

Disclosure of the Invention

05 This invention relates to a method of producing  
an enhanced flavor impact and an improved mouthfeel  
character in an acidic fruit-flavored beverage  
comprising the addition of a protein hydrolyzate.  
The hydrolyzate chosen must be bland and possess no  
appreciable off-flavors or off-odors. The protein  
hydrolyzate also must be soluble in water at pH  
2.5-4 and preferably soluble in cold water. Both  
10 chemically hydrolyzed and enzymatically hydrolyzed  
protein hydrolyzates may be utilized in the present  
invention. The preferable protein hydrolyzates are  
enzymatically hydrolyzed protein hydrolyzates because  
of their blandness, lack of off-flavors and off-odors.

15 The protein source may be derived from animal  
or vegetable matter or combinations thereof. Exem-  
plary of protein sources which may be employed are  
fish, meat, soy, wheat, corn, egg albumin, milk  
proteins, plant proteins, keratin, gelatin, single  
20 cell proteins and mixtures thereof. The preferable  
protein sources for the preparation of the protein  
hydrolyzates are gelatin and soy. Suitable protein  
hydrolyzates are Novo APP 108, Novo PP 033 SD,  
Gunther's Acid Soluble Vegetable Protein 1535 and  
25 Gunther's K-88 Whipping Aid all being derived from a  
soy protein source and Krafts's Humko Sheffield  
Primatone G being derived from a gelatin protein  
source.

30 The resulting reconstituted beverage has a  
significantly improved aroma, flavor and mouthfeel  
characteristics and matches closely the sensory  
properties of the natural fruit juice (e.g. orange).  
The presence of the protein hydrolyzate in the  
beverage functions to organoleptically produce an  
35 overall blending of aromatic flavors and basic  
tastes which yields a closer resemblance to real

fruit juice. The effect of the protein hydrolyzate is similar, but superior, to that of the addition of amino acids as taught in the previously mentioned U.S. Patent Application. This is particularly significant because in the referenced U.S. Application, the free amino acid was believed to be contributing the beneficial effect. Viewed against this teaching, it is surprising that a protein hydrolyzate which contains a majority of peptides and polypeptides and very few free amino acids would produce the same effect much less a more pronounced effect. The protein hydrolyzate, because of its ability to act as a surface tension reducing agent and a foam former, provides flavor blending, better body and a foaming characteristic of freshly squeezed orange juice. The foam contributes to better appearance, increased glass aroma and better flavor delivery. The invention significantly decreases sensory differences between compounded beverages and fresh fruit juices. Additionally, the incorporation of a protein hydrolyzate is significantly more cost-effective as compared to the incorporation of amino acids.

The protein hydrolyzates previously identified can be added to a ready-to-drink beverage, a dry beverage mix or a beverage concentrate and they will produce an enhanced flavor impact and an improved mouthfeel character in each of these beverage systems. The level of incorporation of the protein hydrolyzate in the beverage on an as-consumed basis varies from 0.1 to 1 grams per liter, preferably from 0.2 to 0.4 grams per liter. When it is incorporated into a dry beverage mix, the protein hydrolyzate will be present at a level of from 0.07% to 0.7% on a dry weight basis, preferably from 0.14% to 0.3%.

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The beverages of the present invention in addition to containing the protein hydrolyzate will contain sweeteners, flavoring agents, clouding agents, dyes, antioxidants, buffering agents, nutritional additives (e.g. vitamins) and other ingredients which have been known to be present in these beverages.

#### BEST MODE FOR CARRYING OUT THE INVENTION

The following examples are provided as illustrations of the flavoring composition of the present invention.

#### EXAMPLE I

Three orange-flavored, dry beverage mixes were prepared containing the following ingredients as reported in Table I. Sample 1 was a control; Sample 2 contained amino acids in addition to the control formula and Sample 3 contained a protein hydrolyzate added to the control formula.

TABLE 1

	Dry Beverage Mix		
	(in grams)		
	Sample 1	Sample 2	Sample 3
		(with amino	(with protein
<u>Ingredients</u>	<u>(Control)</u>	<u>acids)</u>	<u>hydrolyzate)</u>
25 Sugars	124.0	124.0	124.0
Food Grade Acids	8.1	8.1	8.1
Buffer Salts	3.2	3.2	3.2
Amino Acids	-	6.6	-
Vitamins	0.4	0.4	0.4
30 Artificial Colors	0.8	0.8	0.8
Clouding Agent	3.1	3.1	3.1
Thickening Agents	1.4	1.4	1.4
Protein Hydrolyzate Novo APP 108	-	-	0.2
Orange Flavors	1.4	1.4	1.4
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Total (g)	142.4	149.0	142.6

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Sample 2 (the amino acid containing dry beverage mix) contained 4.4% amino acids on a dry weight basis and Sample 3 (the protein hydrolyzate containing dry beverage mix) contained 0.14% protein hydrolyzate on a dry weight basis. All samples were reconstituted with water to make one liter of the beverage. The beverages were stirred until all material had completely dissolved. Sample 2 contained 6.6 grams per liter of amino acids as-consumed, Sample 3 contained 0.2 grams per liter of protein hydrolyzate as-consumed and the control (Sample 1) contained neither.

The three samples were evaluated by a benchtop trained taste panel and their sensory characteristics are reported below in Table 2.

TABLE 2  
Sensory Characteristics

20	Sample 1 (Control)	Like orange candy. Very sweet with high tartness. Slightly watery mouthfeel, thin.
25	Sample 2 (with amino acids)	Like somewhat tart orange juice. Well-blended sweetness and sourness. Sour and bitter aftertastes. Slightly thicker mouthfeel than 1.
30	Sample 3 (with protein hydrolyzate)	More orange juice-like than 2. Sweeter and better blended than 2. No sour or bitter aftertastes. Thicker and less watery mouthfeel than 2.

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EXAMPLE 2

Ready-to-drink beverages were prepared which contained the levels of ingredients as indicated in Table III. The only difference between the two beverage samples was the addition of the gelatin derived protein hydrolyzate to the second beverage sample.

TABLE III

	<u>Control</u>	<u>Control plus protein Hydrolyzate</u>
10 Sugar	124.0 grams	124.0 grams
Food Grade Acids	8.1	8.1
Buffer Salts	3.2	3.2
Vitamins	0.7	0.7
Artificial Colors	0.04	0.04
Clouding Agent	3.1	3.1
15 Thickening Agent	1.4	1.4
Primatone G. Protein Hydrolyzate	-	0.2
Mandarin Flavor Emulsion	1.76	1.76
Water	910 ml	910 ml

Preparation: Add ingredients to water with agitation. Stir till dissolved. Heat to 185°F for 15 seconds. Pack aseptically in Brik-Pak containers.

Evaluation: Bench-top organoleptic evaluation showed the beverage which incorporated the protein hydrolyzate to be sweeter, thicker, better in sweet/sour blending, higher in aroma, and less bitter and sour in aftertaste.

CLAIMS

1. A method of producing an enhanced flavor impact and an improved mouthfeel character in an acidic fruit-flavored beverage comprising the addition of a protein hydrolyzate, said protein hydrolyzate being bland, possessing no appreciable off-flavors or off-odors and said hydrolyzate being soluble in water at pH 2.5 to 4.
2. The method of Claim 1 wherein said protein hydrolyzate is derived from a protein source which is selected from the group consisting of fish, meat, soy, wheat, corn, egg albumin, milk proteins, plant proteins, keratin, gelatin, single cell proteins and combinations thereof.
3. The method of Claim 2 wherein the protein hydrolyzate is an enzymatically hydrolyzed protein hydrolyzate.
4. The method of Claim 2 wherein the protein source is soy or gelatin.
5. The method of Claim 2 wherein said protein hydrolyzate is additionally soluble in cold water.
6. The method of claims 1, 2, 3 or 4 wherein the protein hydrolyzate is incorporated at a level of from 0.1 to 1 gram per liter on an as-consumed basis.
7. The method of Claim 6 wherein the level is from 0.2 to 0.4 grams per liter on an as-consumed basis.
8. The method of Claims 1, 2, 3 or 4 wherein the beverage is a dry beverage mix and the protein hydrolyzate is incorporated at a level of from 0.07% to 0.7% on a dry weight basis.
9. The method of Claim 8 wherein the protein hydrolyzate is incorporated at a level of from 0.14% to 0.3% on a dry weight basis.

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10. The method of Claim 6 wherein said acidic fruit-flavored beverage is a ready-to-drink beverage.

11. The method of Claim 10 wherein the level is from 0.2 to 0.4 grams per liter on an as-consumed basis.

12. The method of Claim 6 wherein said acidic fruit-flavored beverage is a beverage concentrate.

13. The method of Claim 12 wherein the level is from 0.2 to 0.4 grams per liter on an as-consumed basis.

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European Patent  
Office

## EUROPEAN SEARCH REPORT

0117047

Application number

EP 84 30 0220

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	GB-A-1 308 690 (DAYLIN LABORATORIES INC.) * Page 3, examples 1-4; claims 1, 2, 4, 7 *	1-5, 10, 12	A 23 L 2/38 A 23 L 2/40
X	--- US-A-4 138 500 (C.V. FULGER et al.) * Column 3, example 3; column 4, example 5; claims 1, 2, 7 *	1-5, 10, 12	
D, A	--- US-A-3 736 150 (J.A. BASSO et al.) * Abstract *		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			A 23 L 2/00
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 04-04-1984	Examiner SCHULTZE D
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons - & : member of the same patent family, corresponding document	

12 **EUROPEAN PATENT SPECIFICATION**

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11.03.87

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21 Application number: **84300220.5**

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54 **Improved fruit flavored beverages.**

30 Priority: **13.01.83 US 457816**

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45 Publication of the grant of the patent:  
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64 Designated Contracting States:  
**AT BE CH DE FR GB IT LI LU NL SE**

56 References cited:  
**GB - A - 1 308 690**  
**US - A - 3 736 150**  
**US - A - 4 138 500**

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## Description

### Technical Field

The invention relates to beverages and more particularly to the addition of certain chemical compounds or compositions which have been found to have utility in the alteration of flavor or mouthfeel characteristics of said beverages.

### Background Art

In the food industry there is a constant demand for the production of additives, whether naturally occurring or synthetic, which are capable of imparting, supplementing or improving the flavor or mouthfeel characteristics of the foodstuffs. It is common in some segments of the industry to add flavor agents to enhance or bring out a desirable characteristic in products and by so doing, render the product more desirable from a consumer preference standpoint.

U.S. Patent 3 395 021 issued to Glicksman et al. teaches a dry fruit flavor beverage mix containing edible acids such as citric, tartaric, adipic, and formic acids. These acids in combination with a gum system produce a product which is similar in flavor and mouthfeel to a fresh fruit beverage. The acids provide tartness in the reconstituted beverage.

U.S. Patent 3 736 150 entitled «Beverage Containing Egg Albumen and Amino Acid» issued to Basso et al. teaches the addition of egg albumen and an amino acid (glycine) to a dry beverage mix, where the egg albumen and glycine are present as the major sources of protein. The glycine also serves an additional function as a flavor enhancer, masking the objectionable egg odor and taste, resulting in a product that is substantially indistinguishable from a similar beverage with all the protein omitted.

U.S. Patent No. 3 649 298 entitled «Carbonation Concentrates For Beverages and Process of Producing Carbonated Beverages» issued to Kreevoy teaches a dry beverage mix containing n-carboxy-amino acid anhydride in combination with the disodium salts of n-carboxy-amino acid producing a carbonated beverage mix.

U.S. Patent 3 510 310 entitled «Artificially Sweetened Beverages and Mixtures Thereof» issued to Breckwoldt teaches a dry beverage mix comprising an edible water-soluble amino carboxylic acid (e.g. glycine, lysine, methionine, etc.). This mix is reconstituted to provide a beverage having a taste and texture similar to the beverage sweetened with sugar. This invention purports to solve the adverse problem associated with artificially sweetened beverages in overcoming the lack of texture and mouthfeel that is inherent in such a beverage.

U.S. Patent 4 031 259 entitled «Process of Preparing Nutritive Sweetening Compositions» issued to Lugay et al. teaches a process for improving the solubility and stability of dipeptide nutritive sweeteners comprising co-drying an amino acid derived nutritive sweetener with a low molecular weight polypeptide, preferably an enzymati-

cally hydrolyzed non-gelatin protein, wherein the ratio of sweetener to polypeptide is from about 1:1 to about 1:20.

On analysis, fruit juices, in particular orange juices are known to contain as much as 9% proteinaceous materials on a dry weight total solids basis. The individual amino acids themselves are sweet, sour, bitter or bland. The prior art neither teaches nor appreciates that either amino acids, peptides or polypeptides are important flavor contributors to fruit juices, or the possibility that they could be utilized to produce an enhanced flavor impact and an improved mouthfeel character in a fruit-flavored dry beverage mix at a low level of incorporation.

An enhanced flavor impact and an improved mouthfeel character in a dry beverage mix was produced by the addition of amino acids. The specific amino acids which produce the effect were 1-proline, 1-asparagine, 1-aspartic acid, 1-arginine,  $\gamma$ -amino-n-butyric acid, 1-alanine, 1-glutamine and combinations thereof. The level of incorporation of the amino acids in a dry mix varies from 0.1% to 8% on a dry weight basis. When reconstituted with water the level of amino acids commonly varies from 0.1 to 8 grams per liter on an as-consumed basis.

There has been a constant demand in the food art for the production of a formulated beverage, whether it be a dry beverage mix, ready-to-drink beverage or beverage concentrate which would contain a flavor and mouthfeel more akin to a real fruit juice.

### Disclosure of the Invention

This invention relates to producing an enhanced flavor impact and an improved mouthfeel character in an acidic fruit-flavored beverage by the addition of a protein hydrolyzate.

According to the invention there is provided an acidic fruit-flavored beverage incorporating a protein hydrolyzate, said protein hydrolyzate being bland, possessing no appreciable off-flavors or off-odors and said hydrolyzate being soluble in water at pH 2.5 to 4, said protein hydrolyzate being incorporated at a level of from 0.1 to 1 gram per liter on an as-consumed basis.

Preferably the hydrolyzate should be soluble in cold water. Both chemically hydrolyzed and enzymatically hydrolyzed protein hydrolyzates may be utilized in the present invention. The preferable protein hydrolyzates are enzymatically hydrolyzed protein hydrolyzates because of their blandness, lack of off-flavors and off-odors.

The protein source may be derived from animal or vegetable matter or combinations thereof. Exemplary protein sources which may be employed are fish, meat, soy, wheat, corn, egg albumin, milk proteins, plant proteins, keratin, gelatin, single cell proteins and mixtures thereof. The preferable protein sources for the preparation of the protein hydrolyzates are gelatin and soy. Suitable protein hydrolyzates are Novo APP 108, Novo PP 033 SD, Gunther's Acid Soluble Vegetable Protein 1535 and Gunther's K-88 Whipping Aid all

being derived from a soy protein source and Kraft's Humko Sheffield Primatone G being derived from a gelatin protein source. (Novo, Gunther, Kraft, Humko, Sheffield and Primatone are all trade names or trade marks).

The resulting reconstituted beverage has a significantly improved aroma, flavor and mouthfeel characteristics and matches closely the sensory properties of the natural fruit juice (e.g. orange). The presence of the protein hydrolyzate in the beverage functions to organoleptically produce an overall blending of aromatic flavors and basic tastes which yields a closer resemblance to real fruit juice. The effect of the protein hydrolyzate is similar, but superior, to that of the addition of amino acids, the free amino acid was believed to be contributing the beneficial effect. Viewed against this teaching, it is surprising that a protein hydrolyzate which contains a majority of peptides and polypeptides and very few free amino acids would produce the same effect much less a more pronounced effect. The protein hydrolyzate, because of its ability to act as a surface tension reducing agent and a foam former, provides flavor blending, better body and a foaming characteristic of freshly squeezed orange juice. The foam contributes to better appearance, increased glass aroma and better flavor delivery. The invention significantly decreases sensory differences between compounded beverages and fresh fruit juices. Additionally, the incorporation of a protein hydrolyzate is significantly more costeffective as compared to the incorporation of amino acids.

The protein hydrolyzates previously identified can be added to a ready-to-drink beverage, a dry beverage mix or a beverage concentrate and they will produce an enhanced flavor impact and an improved mouthfeel character in each of these beverage systems. The level of incorporation of the protein hydrolyzate in the beverage on an as-consumed basis is preferably from 0.2 to 0.4 grams per liter. When it is incorporated into a dry beverage mix, the protein hydrolyzate will be present at a level of from 0.07% to 0.7% on a dry weight basis, preferably from 0.14% to 0.3%.

The beverages of the present invention in addition to containing the protein hydrolyzate will contain sweeteners, flavoring agents, clouding agents, dyes, antioxidants, buffering agents, nutritional additives (e.g. vitamins) and other ingredients which have been known to be present in these beverages.

#### Best mode for carrying out the invention

The following examples are provided as illustrations of the flavoring composition of the present invention.

#### Example I

Three orange-flavored, dry beverage mixes were prepared containing the following ingredients as reported in Table I. Sample 1 was a control; Sample 2 contained amino acids in addition to the control formula and Sample 3 contained a protein hydrolyzate added to the control formula.

Table 1

Ingredients	Dry Beverage Mix (in grams)		
	Sample 1 (Control)	Sample 2 (with amino acids)	Sample 3 (with protein hydrolyzate)
Sugars	124.0	124.0	124.0
Food Grade Acids	8.1	8.1	8.1
Buffer Salts	3.2	3.2	3.2
Amino Acids	—	6.6	—
Vitamins	0.4	0.4	0.4
Artificial Colors	0.8	0.8	0.8
Clouding Agent	3.1	3.1	3.1
Thickening Agents	1.4	1.4	1.4
Protein Hydrolyzate Novo APP 108	—	—	0.2
Orange Flavors	1.4	1.4	1.4
Total (g)	142.4	149.0	142.6

Sample 2 (the amino acid containing dry beverage mix) contained 4.4% amino acids on a dry weight basis and Sample 3 (the protein hydrolyzate containing dry beverage mix) contained 0.14% protein hydrolyzate on a dry weight basis. All samples were reconstituted with water to

make one liter of the beverage. The beverages were stirred until all material had completely dissolved. Sample 2 contained 6.6 grams per liter of amino acids as-consumed, Sample 3 contained 0.2 grams per liter of protein hydrolyzate as-con-

sumed and the control (Sample 1) contained neither.

The three samples were evaluated by a bench-top trained taste panel and their sensory characteristics are reported below in Table 2.

Table 2  
Sensory Characteristics

Sample 1 (Control)	Like orange candy. Very sweet with high tartness. Slightly watery mouthfeel, thin.
Sample 2 (with amino acids)	Like somewhat tart orange juice. Well-blended sweetness and sourness. Sour and bitter aftertastes. Slightly thicker mouthfeel than 1.
Sample 3 (with protein hydrolyzate)	More orange juice-like than 2. Sweeter and better blended than 2. No sour or bitter aftertastes. Thicker and less watery mouthfeel than 2.

#### Example 2

Ready-to-drink beverages were prepared which contained the levels of ingredients as indicated

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in Table III. The only difference between the two beverage samples was the addition of the gelatin derived protein hydrolyzate to the second beverage sample.

Table III

	Control	Control plus protein Hydrolyzate
Sugar	124.0 grams	124.0 grams
Food Grade Acids	8.1	8.1
Buffer Salts	3.2	3.2
Vitamins	0.7	0.7
Artificial Colors	0.04	0.04
Clouding Agent	3.1	3.1
Thickening Agent	1.4	1.4
Primatone G. Protein Hydrolyzate	—	0.2
Mandarin Flavor Emulsion	1.76	1.76
Water	910 ml	910 ml

#### Preparation:

Add ingredients to water with agitation. Stir till dissolved. Heat to 185°F (85 °C) for 15 seconds. Pack aseptically in Brik-Pak containers.

#### Evaluation:

Bench-top organoleptic evaluation showed the beverage which incorporated the protein hydrolyzate to be sweeter, thicker, better in sweet/sour blending, higher in aroma, and less bitter and sour in aftertaste.

#### Claims for the Contracting States BE, CH, DE, FR, GB, IT, LI, LU, NL, SE

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1. An acidic fruit-flavored beverage incorporating a protein hydrolyzate, said protein hydrolyzate being bland, possessing no appreciable off-flavors or off-odors and said hydrolyzate being soluble in water at pH 2.5 to 4, said protein hydrolyzate being incorporated at a level of from 0.1 to 1 gram per liter on an as-consumed basis.

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2. An acidic fruit-flavored beverage according to Claim 1 in which the protein hydrolyzate is incorporated at a level of from 0.2 to 0.4 grams per liter on an as-consumed basis.

3. An acidic fruit-flavored beverage according to either of Claims 1 and 2, in which the protein hydrolyzate is derived from a protein source which is selected from fish, meat, soy, wheat, corn, egg albumin, milk proteins, plant proteins,



kerotin, gelatin, single cell proteins and combinations thereof.

4. An acidic fruit-flavored beverage according to Claim 3, in which the protein source is soy or gelatin.

5. An acidic fruit-flavored beverage according to either of Claims 3 and 4, in which the protein hydrolyzate is an enzymatically hydrolyzed protein hydrolyzate.

6. An acidic fruit-flavored beverage according to any one of claims 3 to 6, in which the protein hydrolyzate is additionally soluble in cold water.

7. A dry beverage mix suitable for the preparation of an acidic fruit-flavored beverage as claimed in any one of Claims 1 to 6, in which a protein hydrolyzate is incorporated at a level of from 0.07% to 0.7% on a dry weight basis.

8. A dry beverage mix suitable for the preparation of an acidic fruit-flavored beverage according to Claim 7, in which a protein hydrolyzate is incorporated at a level of from 0.14% to 0.3% on a dry weight basis.

9. The use in an acidic fruit-flavored beverage of a protein hydrolyzate which hydrolyzate is bland, possesses no appreciable off-flavors or off-odors and is soluble in water at pH 2.5 to 4 and said hydrolyzate is incorporated at a level of from 0.1 to 1 gram/liter on an as-consumed basis.

10. A use as claimed in claim 9 in which the protein hydrolyzate is as specifically defined in any one of Claims 2 to 6.

#### Claims for the Contracting State AT

1. A method of preparing an acidic fruit-flavored beverage whereby there is incorporated into the beverage a protein hydrolyzate, said protein hydrolyzate being bland, possessing no appreciable off-flavors or off-odors and said hydrolyzate being soluble in water at pH 2.5 to 4, said protein hydrolyzate being incorporated at a level of from 0.1 to 1 gram per liter on an as-consumed basis.

2. A method according to claim 1 in which the protein hydrolyzate is incorporated at a level of from 0.2 to 0.4 grams per liter on an as-consumed basis.

3. A method according to either of claims 1 and 2, in which the protein hydrolyzate is derived from a protein source which is selected from fish, meat, soy, wheat, corn, egg albumin, milk proteins, plant proteins, kerotin, gelatin, single cell proteins and combinations thereof.

4. A method according to claim 3, in which the protein source is soy or gelatin.

5. A Method according to either of claims 3 and 4, in which the protein hydrolyzate is an enzymatically hydrolyzed protein hydrolyzate.

6. A method according to any one of claims 3 to 5, in which the protein hydrolyzate is added to a cold water beverage.

7. A process for preparing a dry beverage mix suitable for the preparation of an acidic fruit-flavored beverage as claimed in any one of claims 1 to 6, in which a protein hydrolyzate is incorpo-

rated into the mix at a level of from 0.07% to 0.7% on a dry weight basis.

8. A process according to claim 7, in which a protein hydrolyzate is incorporated at a level of from 0.14% to 0.3% on a dry weight basis.

9. The use in an acidic fruit-flavored beverage of a protein hydrolyzate which hydrolyzate is bland, possesses no appreciable off-flavors or off-odors and is soluble in water at pH 2.5 to 4 and said hydrolyzate is incorporated at a level of from 0.1 to 1 gram/liter on an as-consumed basis.

10. A use as claimed in claim 9 in which the protein hydrolyzate is as specifically defined in any one of claims 2 to 6.

#### Patentansprüche für die Vertragsstaaten BE, CH, DE, FR, GB, IT, LI, LU, NL, & SE

1. Getränk mit säuerlichem Fruchtgeschmack, mit einem Eiweisshydrolysat, das mild ist und keinen merklichen Beigeschmack oder Geruch besitzt und bei einem pH-Wert von 2,5 bis 4 in Wasser löslich ist und das in dem genussfertigen Getränk in einer Konzentration von 0,1 bis 1 g/l enthalten ist.

2. Getränk mit säuerlichem Fruchtgeschmack nach Anspruch 1, dadurch gekennzeichnet, dass das Eiweisshydrolysat in dem genussfertigen Getränk in einer Konzentration von 0,2 bis 0,4 g/l enthalten ist.

3. Getränk mit säuerlichem Fruchtgeschmack nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass das Eiweisshydrolysat von einer Eiweissquelle abgeleitet worden ist, die aus Fisch, Fleisch, Sojabohnen, Weizen, Mais, Eialbumin, Milcheiweiss, Pflanzeiweiss, Kerotin, Gelatine, Einzeller-Eiweiss und Kombinationen derselben ausgewählt ist.

4. Getränk mit säuerlichem Fruchtgeschmack nach Anspruch 3, dadurch gekennzeichnet, dass die Eiweissquelle aus Sojabohnen oder Gelatine besteht.

5. Getränke mit säuerlichem Fruchtgeschmack nach Anspruch 3 oder 4, dadurch gekennzeichnet, dass das Eiweisshydrolysat ein enzymatisch hydrolysiertes Eiweisshydrolysat ist.

6. Getränk mit säuerlichem Fruchtgeschmack nach einem der Ansprüche 3 bis 6, dadurch gekennzeichnet, dass das Eiweisshydrolysat auch in kaltem Wasser löslich ist.

7. Getränke-Trochenmischung zum Zubereiten eines Getränks mit säuerlichem Fruchtgeschmack nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, dass es ein Eiweisshydrolysat in einer Menge von 0,07 bis 0,7 Trockengewichtsprozent enthält.

8. Getränke-Trockenmischung zum Zubereiten eines Getränks mit säuerlichem Fruchtgeschmack nach Anspruch 7, dadurch gekennzeichnet, dass es ein Eiweisshydrolysat in einer Menge von 0,14 bis 0,3 Trockengewichtsprozent enthält.

9. Die Verwendung eines Eiweisshydrolysats, das mild ist, keinen merklichen Beigeschmack oder Geruch besitzt und bei einem pH-Wert von 2,5 bis 4 in Wasser löslich ist, in einem Getränk mit säuerlichem Fruchtgeschmack, wobei in dem

genussfertigen Getränk das Hydrolysat in einer Konzentration von 0,1 bis 1 g/l enthalten ist.

10. Verwendung nach Anspruch 9, dadurch gekennzeichnet, dass ein Eiweisshydrolysat nach einem der Ansprüche 2 bis 6 verwendet wird.

#### Patentansprüche für den Vertragsstaat AT

1. Verfahren zum Herstellen eines Getränks mit säuerlichem Fruchtgeschmack, dadurch gekennzeichnet, dass in dem Getränk ein Eiweisshydrolysat verwendet wird, das mild ist und keinen merklichen Beigeschmack oder Geruch besitzt und bei einem pH-Wert von 2,5 bis 4 in Wasser löslich ist und das in dem genussfertigen Getränk in einer Konzentration von 0,1 bis 1 g/l enthalten ist.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, dass das Eiweisshydrolysat in einer Menge von 0,2 bis 0,4 g/l des genussfertigen Getränks verwendet wird.

3. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass ein Eiweisshydrolysat verwendet wird, das von einer Eiweissquelle abgeleitet worden ist, die aus Fisch, Fleisch, Sojabohnen, Weizen, Mais, Eialbumin, Milcheiweiss, Pflanzeiweiss, Kerotin, Gelatine, Einzeller-Eiweiss und Kombinationen derselben ausgewählt ist.

4. Verfahren nach Anspruch 3, dadurch gekennzeichnet, dass die Eiweissquelle aus Sojabohnen oder Gelatine besteht.

5. Verfahren nach Anspruch 3 oder 4, dadurch gekennzeichnet, dass das Eiweisshydrolysat ein enzymatisch hydrolysiertes Eiweisshydrolysat ist.

6. Verfahren nach einem der Ansprüche 3 bis 5, dadurch gekennzeichnet, dass das Eiweisshydrolysat einem Kaltwassergetränk zugesetzt wird.

7. Verfahren zum Herstellen einer Getränke-Trockenmischung zum Herstellen eines Getränks mit säuerlichem Fruchtgeschmack nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, dass in dem Gemisch ein Eiweisshydrolysat in einer Menge von 0,07 bis 0,7 Trockengewichtsprozent verwendet wird.

8. Verfahren nach Anspruch 7, dadurch gekennzeichnet, dass ein Eiweisshydrolysat in einer Menge von 0,14 bis 0,3 Trockengewichtsprozent verwendet wird.

9. Die Verwendung eines Eiweisshydrolysats, das mild ist, keinen merklichen Beigeschmack oder Geruch besitzt und bei einem pH-Wert von 2,5 bis 4 in Wasser löslich ist, in einem Getränk mit säuerlichem Fruchtgeschmack, wobei indem genussfertigen Getränk das Hydrolysat in einer Konzentration von 0,1 bis 1 g/l enthalten ist.

10. Verwendung nach Anspruch 9, dadurch gekennzeichnet, dass ein Eiweisshydrolysat nach einem der Ansprüche 2 bis 6 verwendet wird.

#### Revendications pour les états contractants BE, CH, DE, FR, GB, IT, LI, LU, NL, SE

1. Boisson à parfum fruité, acide, comprenant un hydrolysat protéique qui est suave, ne présente pas de mauvais goût ou de mauvaise odeur et est soluble dans l'eau à un pH de 2,5 à 4, cet hydroly-

sat protéique étant prévu à raison de 0,1 à 1 g par litre sur la base de l'état de consommation.

2. Boisson à parfum fruité, acide, suivant la revendication 1, caractérisée en ce que l'hydrolysat protéique est prévu à raison de 0,2 à 0,4 g par litre sur la base de l'état de consommation.

3. Boisson à parfum fruité, acide, suivant l'une ou l'autre des revendications 1 et 2, caractérisée en ce que l'hydrolysat protéique provient d'une source de protéines choisie parmi le poisson, la viande, le soja, le blé, le maïs, l'ovalbumine, les protéines du lait, les protéines des plantes, la kératine, la gélatine, les protéines unicellulaires et leurs combinaisons.

4. Boisson à parfum fruité, acide, suivant la revendication 3, caractérisée en ce que la source de protéines est le soja ou la gélatine.

5. Boisson à parfum de fruit, acide, suivant l'une ou l'autre des revendications 3 et 4, caractérisée en ce que l'hydrolysat protéique est un hydrolysat protéique hydrolysé par voie enzymatique.

6. Boisson à parfum de fruit, acide, suivant l'une quelconque des revendications 3 à 5, caractérisée en ce que l'hydrolysat protéique est en outre soluble dans l'eau froide.

7. Mélange sec de boisson, convenant à la préparation d'une boisson à parfum fruité, acide, suivant l'une quelconque des revendications 1 à 6, caractérisé en ce qu'on y incorpore un hydrolysat protéique à raison de 0,07% à 0,7% sur la base du poids sec.

8. Mélange sec de boisson, convenant à la préparation d'une boisson à goût fruité, acide, suivant la revendication 7, caractérisé en ce qu'on y incorpore un hydrolysat protéique à raison de 0,14% à 0,3% sur la base du poids sec.

9. Utilisation, dans une boisson à parfum fruité, acide, d'un hydrolysat protéique qui est suave, ne présente pas de mauvais goût ou de mauvaise odeur et est soluble dans l'eau à un pH de 2,5 à 4, cet hydrolysat étant prévu à raison de 0,1 à 1 g/litre sur la base de l'état de consommation.

10. Utilisation suivant la revendication 9, caractérisée en ce que l'hydrolysat protéique est tel que défini spécifiquement dans l'une quelconque des revendications 2 à 6.

#### Revendications pour l'état contractant AT

1. Procédé de préparation d'une boisson à parfum fruité, acide, dans lequel on incorpore dans la boisson un hydrolysat protéique qui est suave, ne présente pas de mauvais goût ou de mauvaise odeur et est soluble dans l'eau à un pH de 2,5 à 4, cet hydrolysat protéique étant prévu à raison de 0,1 à 1 g par litre sur la base de l'état de consommation.

2. Procédé suivant la revendication 1, caractérisé en ce que l'hydrolysat protéique est prévu à raison de 0,2 à 0,4 g par litre sur la base de l'état de consommation.

3. Procédé suivant l'une ou l'autre des revendications 1 et 2, caractérisé en ce que l'hydrolysat protéique provient d'une source de protéines choisie parmi le poisson, la viande, le soja, le blé,

le maïs, l'ovalbumine, les protéines du lait, les protéines des plantes, la kératine, la gélatine, les protéines unicellulaires et leurs combinaisons.

4. Procédé suivant la revendication 3, caractérisé en ce que la source de protéines est le soja ou la gélatine.

5. Procédé suivant l'une ou l'autre des revendications 3 et 4, caractérisé en ce que l'hydrolysate protéique est un hydrolysate protéique hydrolysé par voie enzymatique.

6. Procédé suivant l'une quelconque des revendications 3 à 5, caractérisé en ce que l'hydrolysate protéique est additionné à une boisson à base d'eau froide.

7. Procédé de préparation d'un mélange sec de boisson, convenant à la préparation d'une boisson à parfum fruité, acide, suivant l'une quelcon-

que des revendications 1 à 6, caractérisé en ce qu'on y incorpore un hydrolysate protéique à raison de 0,07% à 0,7% sur la base du poids sec.

8. Procédé suivant la revendication 7, caractérisé en ce qu'on y incorpore un hydrolysate protéique à raison de 0,14% à 0,3% sur la base du poids sec.

9. Utilisation, dans une boisson à parfum fruité, acide, d'un hydrolysate protéique qui est suave, ne présente pas de mauvais goût ou de mauvaise odeur et est soluble dans l'eau à un pH de 2,5 à 4, cet hydrolysate étant prévu à raison de 0,1 à 1 g/litre sur la base de l'état de consommation.

10. Utilisation suivant la revendication 9, caractérisée en ce que l'hydrolysate protéique est tel que défini spécifiquement dans l'une quelconque des revendications 2 à 6.